

**Bay Area Air Quality Management District
939 Ellis Street
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**PROPOSED AMENDMENTS TO DISTRICT REGULATION 9,
RULE 2: HYDROGEN SULFIDE**

TECHNICAL ASSESSMENT MEMORANDUM

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HYDROGEN SULFIDE****TABLE OF CONTENTS**

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TECHNICAL ASSESSMENT MEMORANDUM

REGULATION 9, RULE 2 HYDROGEN SULFIDE

EXECUTIVE SUMMARY

There are numerous sources of hydrogen sulfide (H₂S) emissions in the Bay Area. Industries that may emit hydrogen sulfide include petroleum refineries, hazardous waste treatment and disposal sites, wastewater treatment operations, publicly owned treatment works (POTWs), municipal solid waste landfills, and chemical manufacturing plants.

Regulation 9, Rule 2 limits the concentration of hydrogen sulfide that may be present outside the property boundaries of a site. The District does not expect H₂S emissions from most industries to result in off-site concentrations that exceed these limits. However, emissions from petroleum refineries and hazardous waste sites can at times result in H₂S levels above the standards. Therefore, the District requires area monitoring for ground level H₂S emissions at all Bay Area petroleum refineries and one hazardous waste disposal site.

When the District's rules were renumbered in 1982, the Regulation 9, Rule 2 area monitoring requirement was inadvertently changed. Originally, area monitoring was required at the APCO's discretion. Under the current language, any facility that emits any amount of hydrogen sulfide is required to install and operate a property line area monitoring network to measure ground level H₂S concentration. This requirement has become a problem for facilities, such as municipal solid waste landfills, that emit low levels of H₂S and that are also subject to Title V permitting requirements. Under the Title V program, facilities must certify annually that they are complying with all applicable requirements. None of the landfills have installed H₂S area monitoring networks. As a result, none of the landfills can certify compliance with the 9-2-501 Area Monitoring Requirements. Approval of Title V permits for landfills has been delayed until this compliance issue can be resolved.

To resolve this compliance issue, staff is proposing to amend the 9-2-501 Area Monitoring Requirements to make area monitoring an APCO discretionary requirement.

The proposed regulatory change actually maintains the status quo. It will have no impacts on emissions, costs, the environment, or staff resources. It meets the California Health and Safety Code, Section 40727 requirements of necessity, authority, clarity, consistency, non-duplication, and reference.

The workshop for this proposed rule amendment is scheduled for April 16, 1999.

BACKGROUND

Emission Sources

There are numerous sources of hydrogen sulfide in the Bay Area, including petroleum refineries, hazardous waste treatment or disposal sites, wastewater treatment operations, publicly owned treatment works (POTWs), municipal solid waste landfills, and chemical manufacturing plants.

The main sources of H₂S at petroleum refineries are the hydrotreating, cracking and sour water stripping processes. Hydrogen sulfide may also be emitted from distillation units, polymerization units, fuel gas systems, waste water treatment operations, storage tanks, combustion equipment, compressors, pumps, valves, or flanges.

Hazardous waste treatment or disposal sites that process wastes containing sulfur compounds could generate H₂S. As these hazardous wastes decompose, gas is generated, which may contain high concentrations of H₂S. This gas can seep from the disposal area into the atmosphere resulting in fugitive H₂S emissions.

POTWs, municipal solid waste landfills, and chemical manufacturing plants are not known to have significant hydrogen sulfide emissions. The main source of H₂S at POTW's is the digestors. At landfills, H₂S is generated during waste decomposition. Landfills that accept large amounts of sewage sludge have landfill gas with higher H₂S concentrations than landfills that do not accept sewage sludge. However, the property line H₂S concentrations at landfills that accept sewage sludge are still expected to be below Regulation 9, Rule 2 limits. At chemical manufacturing plants, reactions involving sulfur compounds may produce H₂S as a byproduct.

Emission Controls

Petroleum refineries use sulfur treatment plants to reduce their H₂S emissions.

Hazardous waste disposal sites could install gas collection and control systems to reduce the amount of fugitive H₂S emissions.

POTWs add ferric chloride to digestors to reduce the amount of H₂S in digester gas. This gas is then burned in flares, boilers, engines, or gas turbines. The combustion process converts nearly all of the H₂S to sulfur dioxide (SO₂).

Municipal solid waste landfills control their H₂S emissions by using gas collection and emission control systems. The primary purposes of these systems are to reduce POC emissions from the landfill and prevent health and safety hazards. The reduction of H₂S is a secondary benefit. As with POTWs, collected gas is burned in flares, boilers, engines, or gas turbines. The combustion process converts nearly all of the H₂S to SO₂. However, the collection systems cannot capture all of the landfill gas. Uncollected landfill gas can seep out of the landfill, resulting in fugitive emissions of H₂S and other compounds.

History of Control

The hydrogen sulfide concentration limits specified in this rule were adopted November 5, 1970. The rule was last modified on March 17, 1982.

The current rule limits the ground level concentration of H₂S at a site's boundary to 0.06 ppm averaged over 3 consecutive minutes and 0.03 ppm averaged over 60 consecutive minutes. This rule does not directly require any control measures. If a site is found to be exceeding the limits, the APCO requires site specific control measures.

When the rules were renumbered in 1982, the ground level monitoring requirement was inadvertently changed. Previously, the rule (Section 11102.1, 11-5-70) stated "... the Control Officer may require continuous [area] monitoring in accordance with [Section] 3210.1." The current version (9-2-501, 3-17-82) requires area monitoring for "Any person emitting hydrogen sulfide from any source ..."

Purpose of Proposed Amendments

Although Regulation 9-2-501 requires an area monitoring network for any site that emits hydrogen sulfide, only a few Bay Area sites have H₂S monitoring networks. No POTWs, municipal solid waste landfills, or chemical manufacturing plants have H₂S monitoring networks.

This conflict between the regulation requirement and current practice has become a problem for facilities, such as municipal solid waste landfills, that emit low levels of H₂S and that are subject to Title V permitting requirements. Through the Title V permitting program, Regulation 9-2-501 was identified as an applicable requirement for landfills, because they emit H₂S. Facilities that receive a Title V permit must certify, on an annual basis, that they are complying with all applicable requirements. Since none of the landfills have an H₂S ground level monitoring network, none of the landfills can currently certify compliance with Regulation 9-2-501.

The proposed amendments are intended to correct the earlier error of changing the monitoring requirement from an APCO discretionary requirement to an absolute requirement for any source of H₂S emissions. The amendments are necessary so that staff can process the Title V permits at landfills. Other Title V facilities with low H₂S emissions will also benefit from this change.

PROPOSED RULE AMENDMENTS

The proposed changes to Regulation 9, Rule 2 are discussed in detail below.

9-2-501 Area Monitoring Requirements

Staff is proposing to change this section as shown below by the underlined and struck-through text. This amendment makes the area monitoring requirements subject to APCO discretion.

The APCO may require Any person emitting hydrogen sulfide from any source is subject to to comply with the monitoring, maintenance, records and reporting requirements of Regulation 1, including Sections 1-510, 1-530, 1-540, 1-542, 1-543, and 1-544. The APCO will notify the affected person in writing that this requirement is being imposed.

EMISSIONS AND EMISSION REDUCTIONS

The proposed change affects an administrative requirement only and will have no affect of hydrogen sulfide emissions.

ECONOMIC IMPACTS

Socioeconomic Impacts

This report has not been completed yet.

Incremental Costs

Changing the area monitoring requirement to an APCO discretionary requirement, will allow the APCO to consider emissions and costs when determining whether or not to impose the H₂S area monitoring requirement. Currently, none of the Bay Area's POTWs, municipal solid waste landfills, or chemical manufacturing plants have ground level hydrogen sulfide monitors. If the APCO determines that H₂S area monitoring is not necessary for these sites, these industries will have no changes in capital, operating, or maintenance costs.

If the area monitoring requirement is not amended, Title V landfills and other Title V facilities that emit H₂S will be required to install ground level H₂S area monitoring networks, in order to meet Title V obligations. The cost of installing and operating these monitors would not be justified when compared to the level of H₂S emissions from these sites. The District would also incur significant additional costs to due the staff time required to review and certify these monitoring systems.

ENVIRONMENTAL IMPACTS

This proposed change is administrative in nature and simply maintains the status quo for sites currently operating (or not operating) hydrogen sulfide area monitors. There is no possibility that this administrative rule revision will have any significant effect on the environment. Therefore, the activity is exempt from CEQA review in accordance with CEQA Guidelines Section 15061(b)(3).

REGULATORY IMPACTS

A detailed review of all state and federal rules that may be applicable to hydrogen sulfide emissions has not been conducted. However, staff is not aware of any other current or proposed requirements for off-site H₂S emissions.

RULE DEVELOPMENT HISTORY

The first workshop is scheduled for April 16, 1999.

DISTRICT STAFF IMPACTS

This change is administrative in nature and simply maintains the status quo. Therefore, this proposed amendment would have no impact on staff requirements. As discussed earlier, failing to adopt this amendment will result in significant staff resources to approve and review the new area monitors that subject Title V facilities would be required to install.

COMMENTS AND RESPONSES

The District has not received any formal comments about this proposal. Based on informal discussions, all landfill operators are expected to be in favor of the proposed rule change.

CONCLUSION

The proposed regulatory change will have no impacts on emissions, costs, the environment, or staff resources. It meets the California Health and Safety Code, Section 40727 requirements of necessity, authority, clarity, consistency, non-duplication, and reference. Therefore, District staff recommends adoption of the proposed rule amendments.